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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/765,505	01/26/2004	Victor Luu	SPEED-P001	2561

7590 06/20/2006

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EXAMINER

STEVENSON, ANDRE C

ART UNIT PAPER NUMBER

2812

DATE MAILED: 06/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/765,505

Applicant(s)

LUU ET AL.

Examiner

Andre' C. Stevenson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 July 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11-27 and 30-32 is/are allowed.
- 6) ☒ Claim(s) 1-10, 28, 29, 33 and 34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

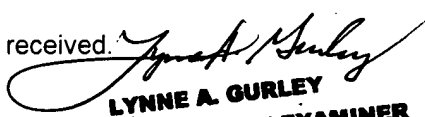
**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

  
**LYNNE A. GURLEY**  
**PRIMARY PATENT EXAMINER**  
**TC 2800, AU 2812**

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 07/12/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

***Detailed Action***

***Drawings***

New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because;

The specifications list descriptions of Figures #1, 2, 3a-e, 7, 8, 10 and 11. However, there are no drawings with these identifications; corrections to these discrepancies is required.

Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

***Information Disclosure Statement***

The information disclosure statement (IDS) submitted on July 17, 2004 was filed before the first action on the merits. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

***Claim Rejections - 35 USC § 102***

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this

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subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims #1-10, 28, 29, 33 and 34 are rejected under 35 U.S.C. 102(e) as being unpatentable by McIntyre et al. (U.S. Pat. No.5,913,105, Pub. Date 06/15/99, Filed 11/29/95).

McIntyre shows, in figure 1-6 and corresponding text, with respect to **claims #1, 4, 29, 33 and 34**, a method for sourcing semiconductor manufacturing defects, comprising the steps of: extracting one or more parameters (extracted-parameters) from a semiconductor manufacturing results file (results file), the results file indicating a set of defect-coordinates (**column #1, lines 40-53; column 4, lines 10-35**); matching the one or more extracted-parameters against one or more candidate defect-signatures (candidate-signatures), the matching step identifying one or more matching defect-signatures (matching-signatures) of the one or more candidate-signatures as matching the one or more extracted-parameters, the one or more matching-signatures indicating an associated one or more defect-sources; and reporting the one or more defect-sources (**column #4, lines 50-62; column #5, lines 54-67; column #6, lines 5-25**). McIntyre also shows, **pertaining to Claims #2, 28**, a method wherein the extracted-parameters comprise an annular defects distribution, a radial defects-distribution or a zonal defects-distribution (**column #5, lines 9-44; column #6, lines 36-67 column #7, lines 1-36**). McIntyre also shows, **pertaining to Claim #3**, a method wherein the first vector representing the one or more extracted-parameters, a second one or more vectors representing the one or more candidate-signatures, a third one or more vectors representing the one or more matching-signatures, wherein the matching step comprises using a k-nearest-neighbor algorithm to compute the third one or more vectors, the third one or more vector representing a set of nearest-neighbors of the first vector, the set of nearest-neighbors

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computed from among the second one or more vectors, and wherein  $k \geq 1$  and the k-nearest-neighbor algorithm uses a standard Euclidean distance function. (**column #5, lines 9-44; column #6, lines 36-67 column #7, lines 1-36**). McIntyre also shows, **pertaining to Claim #5**, a method wherein the semiconductor manufacturing results file comprises a KLA results file or a FITS image file (**column #4, lines 10-35**). McIntyre also shows, **pertaining to Claim #6**, a method wherein the reporting step comprises sending an alert using a fabrication plant notification system (**column #4, lines 10-35; column #1, lines 40-53**). McIntyre also shows, **pertaining to Claim #7**, a method further comprising the step of filtering the results file by defect size, defect classification, defect spectral frequency or defect intensity (**column #1, lines 40-53**). McIntyre also shows, **pertaining to Claim #8**, a method method for processing a semiconductor manufacturing results file (results file), comprising the steps of: computing a set of k-nearest-neighbor distances (k-NN distances) for a set of defect-coordinates, the set of defect-coordinates indicated by the results file; and classifying a frequency distribution of the set of k-NN distances as a positively-skewed distribution, a negatively-skewed distribution, a reverse-J distribution, a bimodal distribution, an annular distribution, a radial distribution, a uniform distribution, or a normal distribution (**column #1, lines 40-53; column #4, lines 10-35; column #4, lines 50-62; column #5, lines 54-67; column #6, lines 5-25**). McIntyre also shows, **pertaining to Claim #9**, a method wherein the classifying step uses a set of one or more classification-tolerances as provided by a user (**column #4, lines 36-41; column #5, lines 30-44**). McIntyre also shows, **pertaining to Claim #10**, a method further comprising the step of storing the frequency distribution in a defect-signature bank (**column #1, lines 40-53; column #4, lines 10-36; column #5, lines 9-44; column #5, lines 1-8; column #4, lines 42-67**).

*Allowable Subject Matter*

The following is an examiner's statement of reasons for allowance: The prior art fails to teach either alone or in combination, a method for computing a set of defect-percentages, wherein a first defect-percentage of the set of defect-percentages is (a) associated with a first wafer-ring of the set of concentric wafer-rings and (b) represents a ratio of the number of wafer-defects falling within the first wafer-ring to the total number of wafer-defects falling within the wafer-map.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Claims #11-27 and 30-32 are allowed.

Claim #11.

- ✓ A method for computing a set of defect-percentages, wherein a first defect-percentage of the set of defect-percentages is (a) associated with a first wafer-ring of the set of concentric wafer-rings and (b) represents a ratio of the number of wafer-defects falling within the first wafer-ring to the total number of wafer-defects falling within the wafer-map.

Claim #14

- ✓ A method for computing a set of defect-percentages, wherein a first defect-percentage of the set of defect-percentages is (a) associated with a first wafer-ring of the set of concentric wafer-rings and (b) represents a ratio of the number of wafer-defects falling within the first wafer-ring to the total number of wafer-defects falling within the wafer-map.

Claim #18

- ✓ First set of horizontal defect percentages represents a ratio of the number of wafer defects falling within the first horizontal strip to the total number of wafer defects falling within the wafer map.

Claim #24

- ✓ Stacking the plurality of dies resulting in a die overlay and analyzing the die overlay to detect one or more repeating patterns.

Claim #26

- ✓ Stacking the plurality of reticle fields resulting in a reticle field overlay and analyzing the reticle field overlay to detect a repeating pattern

Claim #30

- ✓ Extracting a set of defect-cluster-parameters for the first defect-cluster, the set of defect-cluster-parameters comprising defect-cluster length, defect-cluster width, defect-cluster area, defect-cluster perimeter, defect-cluster

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centroid, radius of defect-cluster curvature, angle of defect-cluster major axis, or distance of defect-cluster to nearest scratch centroid.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andre' Stevenson whose telephone number is (571) 272 1683. The examiner can normally be reached on Monday through Friday from 7:30 am to 4:30 pm.

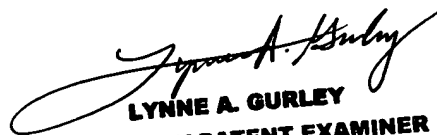
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael S. Lebentritt, can be reached on (571) 272 1873. The fax phone number for the organization where this application or proceeding is assigned is (703) 308 7724.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308 0956. Also, the proceeding numbers can be used to fax information through the Right Fax system;

**(703) 872-9306**

Andre' Stevenson

06/06/06

  
**LYNNE A. GURLEY**  
**PRIMARY PATENT EXAMINER**  
**TC 2800, AU 2812**